

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

To place the subject application in better form, the specification has been amended to correct minor informalities. Also, a new abstract is presented on a separate page in accordance with preferred practice. No new matter has been added by these changes.

Claims 16-28 are presented for consideration in lieu of claims 1-15, which have been canceled without prejudice or disclaimer. Claim 16 is the sole independent claim. Claims 16-28 have been amended to clarify features of the subject invention. Support for these claims can be found in the original application, as filed. Therefore, no new matter has been added.

The Examiner required that Figures 10, 12, 14 and 15 be labeled as -- PRIOR ART --. Replacement sheets for Figures 10 and 12 are being filed concurrently herewith by separate paper to submit corrected Figures 10 and 12.

Figure 14, however, is believed to show the flow of the whole manufacturing process of a semiconductor device using the wafer process of the invention and Figure 15 is believed to show the detailed flow chart of the wafer process of the invention in accordance with the disclosure of lines 1 through 5 of page 8 and the recitation of Claim 15 of the specification as originally filed. Accordingly, the specification has been amended at line 27 of page 9, line 3 of page 10, lines 11 and 22 of page 26 to add the phrase "using the exposure apparatus of the present invention". Favorable consideration is requested.

Applicant requests favorable reconsideration and withdrawal of the rejections set forth in the above-noted Office Action.

Cancelled Claims 1-3 and 8-15 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. patent application publication number 2003/0048428 to Kemper et al. Cancelled Claims 4-7 were rejected under 35 U.S.C. § 103 as being unpatentable over the Kemper et al. publication. Applicant submits that the cited art does not teach many features of the present invention, as previously recited in cancelled Claims 1-15. Therefore, these rejections are respectfully traversed. In addition, Applicant submits that independent claim 16, for example, as presented, amplifies the distinctions between the present invention and the cited art.

New independent Claim 16 is directed to exposure apparatus which has an optical system and that transfers a mask pattern to a substrate via the optical system. In the apparatus, a partition wall defines a space that includes an optical path of the optical system. An elastic seal member couples a structure and the partition wall to seal the space. The elastic seal member is arranged so that a hollow cylinder is compressed in the direction of the hollow cylinder axis. In the uncompressed state, the hollow cylinder has a member undulated in cross-section perpendicular to the axis. The shape of the uncompressed hollow cylinder in cross-section is substantially uniform along the axis.

In Applicant's view, Kemper et al. discloses bellows that are used to connect two sealed compartments of the lithographic apparatus or a compartment and a pump. the bellows has a first section with smooth helical corrugations and a second section that can accommodate the longitudinal movement caused by relative rotation of the ends of the first section. The second

section may be a mirror image of the first section or one or more sub-sections of circumferential corrugations.

According to the invention defined in Claim 16, an elastic seal member coupling a structure and a partition wall is arranged so that a hollow cylinder is compressed in the direction of the hollow cylinder axis. In an uncompressed state, the hollow cylinder has a member undulated in cross-section perpendicular to the hollow cylinder axis and shaped substantially uniform along the hollow cylinder axis. Advantageously, vibration transmission between the structure and the partition wall of an exposure apparatus through the elastic seal member coupling the structure and the partition wall is suppressed and exposure precision in the exposure apparatus is increased.

Kemper et al. may disclose a bellows that is generally cylindrical or conical with corrugations perpendicular to the bellows axis and variations using smooth corrugations extending helically about the longitudinal axis of the bellows. In contrast to the corrugations of Kemper et al. which are either perpendicular to the bellows axis or helical about the bellows axis as shown in Figs. 2-6 of Kemper et al., it is a feature of Claim 16 that the hollow cylinder in its uncompressed state has a cross-section with a shape that is substantially uniform along the hollow cylinder axis as shown in Figs. 6 through 9. It is a further feature of Claim 16 that the hollow cylinder of the elastic seal member coupling the structure and the partition wall is compressed in its axial direction. Kemper et al. is devoid of any teaching or suggestion of the bellows connecting two sealed compartments or a sealed compartment and a pump being installed in a compressed state as in Claim 16. Accordingly, it is not seen that Kemper et al.'s

corrugations perpendicular to the bellows axis or smooth helical corrugations around the bellows longitudinal axis could possibly teach or suggest the feature of the elastic seal member's hollow cylinder in its uncompressed state having a substantially uniform cross-section shape along its axis combined with the feature of the elastic seal member arrangement of its hollow cylinder being compressed in the axial direction. In at least the foregoing respects, it is believed that new Claim 16 is completely distinguished from Kemper et al. and is allowable.

Applicant submits that the cited art does not teach or suggest such features of the present invention as recited in independent claim 16.

For the foregoing reasons, Applicant submits that the present invention, as recited in independent claim 16, is patentably defined over the cited art.

Dependent claims 17-28 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicant further submits that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and an early Notice of Allowance are requested.

Applicant's attorney, Steven E. Warner, may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

  
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